

WHAT IS CLAIMED IS:

1. In the process of polymerizing a material system containing an emulsion of at least one monomer for making a rubber latex in the presence of a alkalipersulfate initiator and the optional presence of salt,  
5 the improvement comprising using said initiator in an amount wherein W, the quantity, in pphr, of decomposed alkalipersulfate relates to the particle size, in nanometers, of the pre-agglomerated rubber particles ( $D_o$ ) as

$$K = W * (1 - 1.4S) * D_o$$

10

wherein S is the amount , in percent relative to the weight of solids in the rubber latex, of the optional salt and K is a constant of 2.3-6.0, with the proviso that  $D_o$  is at least 85 nm.

- 15 2. The process of Claim 1 wherein K is 3-4.

3. The process of Claim 1 wherein K is 3.25-3.50.

4. The process of Claim 1 wherein  $D_o$  is at least 100 nm.

20

5. The process of Claim 1 wherein monomer is at least one member selected from the group consisting of 1,3-dienes and (meth)acrylates.

- 25 6. The process of Claim 5 wherein monomers further include at least one member selected from the group consisting of styrene, alkylstyrene, vinyl naphthalene; (meth)acrylonitrile and acrylamide.

7. The process of Claim 1 wherein the material systems contains 75 to 100 percent by weight of butadiene and/or isoprene and up to 25 percent  
30 by weight of at least one member selected from the group consisting of monovinylidene aromatic hydrocarbons and unsaturated nitriles.

8. The process of Claim 1 wherein the material system contains 1,3-butadiene.

9. The process of Claim 1 wherein the material system is a mixture of 80 to 95 percent by weight of butadiene and 5 to 20 percent by weight of acrylonitrile and/or styrene.

10. In the process of polymerizing a material system containing an emulsion of at least one monomer selected from the group consisting of 1,3-dienes and (meth)acrylates. and a crosslinking agent, for making a rubber latex in the presence of a alkalipersulfate initiator and the optional presence of salt, the improvement comprising using said initiator in an amount wherein W, the quantity, in pphr, of decomposed alkalipersulfate relates to the particle size, in nanometers, of the pre-agglomerated rubber particles ( $D_o$ ) as

$$K = W * (1 - 1.4S) * D_o$$

wherein S is the amount, in percent relative to the weight of solids in the rubber latex, of the optional salt and K is a constant of 3-4.0, with the proviso that  $D_o$  is at least 100 nm.

11. The process of Claim 1 wherein emulsion further contains a cross linking agent.

12. The process of Claim 11 wherein crosslinking agent is a member selected from the group consisting of divinylbenzene, diallyl maleate, diallyl fumarate, diallyl adipate, allyl acrylate, allylmethacrylate, diacrylates and dimethacrylates of polyhydric alcohols.

13. A process for making an agglomerate of rubber latex having agglomerate particle size  $D$ , measured in nanometers, comprising

(i) polymerizing a material system containing an emulsion of at least one monomer for making a rubber latex in the presence of a alkalipersulfate initiator and the optional presence of salt, to obtain latex having pre-agglomerated particle size , in nanometers,  $D_o$ ,

- 5           (ii) mixing the latex obtained in (i) with an agglomerating agent, wherein the quantity, in pphr, of decomposed alkalipersulfate ,W, relates to  $D_o$  as

$$K = W * (1 - 1.4S) * D_o$$

- 10       where S is the amount , in percent relative to the weight of solids in the rubber latex, of the optional salt and K is a constant of 2.3-6.0, with the proviso that is  $D_o$  at least 85 nm and  $D/D_o$  is at least 1.5.

14.       The process of Claim 13 wherein K is 3-4.

- 15       15.       The process of Claim 13 wherein K is 3.25-3.50.

16.       The process of Claim 13 wherein  $D_o$  is at least 100 nm.

- 20       17.       The process of Claim 13 wherein monomer is at least one member selected from the group consisting of 1,3-dienes and (meth)acrylates.

18.       The process of Claim 17 wherein monomers further include at least one member selected from the group consisting of styrene, alkylstyrene,  
25       vinyl naphthalene; (meth)acrylonitrile and acrylamide.

19.       The process of Claim 13 wherein the material systems contains 75 to 100 percent by weight of butadiene and/or isoprene and up to 25 percent by weight of at least one member selected from the group  
30       consisting of monovinylidene aromatic hydrocarbons and unsaturated nitriles.

20. The process of Claim 13 wherein the material system contains 1,3-butadiene.

21. The process of Claim 13 wherein the material system is a mixture  
5 of 80 to 95 percent by weight of butadiene and 5 to 20 percent by weight of acrylonitrile and/or styrene.

22. The process of claim 13 wherein agglomerating agent is an organic acid anhydride.

10

23. The process of Claim 22 wherein agent further contains an aqueous solution of an organic acid.

15

24. The process of Claim 13 wherein emulsion further contains a cross linking agent.

25. The process of Claim 24 wherein crosslinking agent is a member selected from the group consisting of divinylbenzene, diallyl maleate, diallyl fumarate, diallyl adipate, allyl acrylate, allylmethacrylate, diacrylates and dimethacrylates of polyhydric alcohols.

20

26. The polymerized material system prepared by the process of Claim 1.

27. The agglomerate of rubber latex prepared by the process of Claim 3.